

What is claimed is:

1. An extracorporeal filter, comprising:

a housing having an inlet for blood and an outlet for waste and ultrafiltrate;

5 a cap attached to the housing opposite the inlet, the cap having an outlet port for blood and an infusion port; and  
a filter media received within the housing.

2. The filter of claim 1, wherein the infusion port is radially adjacent the outlet port for blood.

10 3. The filter of claim 1, wherein the cap is solvent bonded to the housing.

4. The filter of claim 1, wherein the cap is removably attached to the housing.

15 5. The filter of claim 1, wherein the port is adapted to receive replacement fluid.

6. The filter of claim 1, wherein the housing has a second cap that carries the inlet.

7. The filter of claim 1, further comprising a second port adapted to receive dilution fluid radially adjacent the inlet.

8. The filter of claim 1, wherein a gap between the filter and the cap defines a headspace.

5 9. The filter of claim 1, wherein the cap is molded of flexible PVC and is solvent bonded to the housing.

10. The filter of claim 1, wherein the blood outlet communicates with a bond socket adapted to receive a flexible tubing.

11. The filter of claim 1, wherein the housing is generally cylindrical.

10 12. The filter of claim 1, wherein the replacement fluid port communicates with a bond socket adapted to receive a flexible tubing.

13. The filter of claim 1, wherein the blood inlet communicates with a bond socket adapted to receive a flexible tubing.

15 14. The filter of claim 1, wherein the waste outlet communicates with a bond socket adapted to receive a flexible tubing.

15. The filter of claim 1, further comprising a second outlet for waste and ultrafiltrate.

16. The filter of claim 1, further comprising a second inlet for blood.

5 17. A method for filtering blood, comprising the steps of:  
providing a housing having a filter, an inlet for blood, an outlet for blood,  
a headspace between the filter and the outlet, and an infusion port communicating with  
the headspace;  
passing blood through the inlet;  
passing blood through the filter;  
10 passing blood through the outlet, and  
infusing dilution fluid into the infusion port to produce hemodilution at the  
outlet.

18. The method of claim 17, further comprising the step of infusing  
dilution fluid into a port adjacent the inlet to produce hemodilution at the inlet.

15 19. The method of claim 17, wherein the housing is cylindrical.

20. The method of claim 17, wherein the dilution fluid swirls in a  
circular pattern in a gap between the filter and the outlet.

21. The method of claim 17, wherein the housing has an outlet for waste and ultrafiltrate.

22. The method of claim 17, wherein the blood outlet is mounted on a cap that is solvent bonded on the housing.

23. The method of claim 17, wherein the step of passing blood through the filter produces hemoconcentration at the outlet.

24. The method of claim 17, wherein the step of passing blood through the filter removes waste and ultrafiltrate.

25. The method of claim 17, wherein the dilution fluid is a physiologic replacement fluid.

26. The method of claim 17, wherein the dilution fluid is saline.

27. The method of claim 17, wherein the dilution fluid is sterile filtered dialysate.

28. The method of claim 17, wherein the dilution fluid is Ringer's lactate.

29. A method for filtering blood, comprising the steps of:  
providing a housing having an inlet for blood, an outlet for blood, and an  
infusion port adjacent the outlet, the housing having a filter,;  
passing blood through the inlet;  
5 passing blood through the filter;  
passing blood through the outlet; and  
infusing dilution fluid into the infusion port adjacent the outlet to produce  
hemodilution at the outlet.

30. The method of claim 29, further comprising the step of infusing  
10 dilution fluid into a port adjacent the inlet to produce hemodilution at the inlet.

31. The method of claim 29, wherein the housing is cylindrical.

32. The method of claim 29, wherein the dilution fluid swirls in a  
circular pattern in a gap between the filter and the outlet.

33. The method of claim 29, wherein the housing has an outlet for  
15 waste and ultrafiltrate.

34. The method of claim 29, wherein the blood outlet is mounted on a  
cap that is solvent bonded on the housing.

35. The method of claim 29, wherein the step of passing blood through the filter produces hemoconcentration at the outlet.

36. The method of claim 29, wherein the step of passing blood through the filter removes waste and ultrafiltrate.

5 37. The method of claim 29, wherein the dilution fluid is a physiologic replacement fluid.

38. The method of claim 29, wherein the dilution fluid is saline.

39. The method of claim 29, wherein the dilution fluid is sterile filtered dialysate.

10 40. The method of claim 29, wherein the dilution fluid is Ringer's lactate.

41. The method of claim 29, wherein there is a headspace between the filter and the outlet.

15 42. The method of claim 41, wherein the dilution port communicates with the headspace.

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43. A blood-processing device, comprising:

a housing having an inlet for blood and an outlet for waste;

a fiber membrane received within the housing; and

a cap attached to the housing opposite the inlet, the cap having an outlet

5 for blood, a headspace between the fiber membrane and the cap, and an infusion port communicating with the headspace.

44. The blood-processing device of claim 43, further comprising an

inlet for dialysate.

45. The blood-processing device of claim 43, further comprising a

10 second port adapted to receive dilution fluid radially adjacent the inlet.

46. A blood-processing device, comprising:

a housing having an outlet for blood and an outlet for waste;

a fiber membrane received within the housing; and

a cap attached to the housing opposite the outlet, the cap having an inlet

15 for blood, a headspace between the fiber membrane and the cap, and an infusion port communicating with the headspace.

47. The blood-processing device of claim 46, further comprising an

inlet for dialysate.

48. The blood-processing device of claim 46, further comprising a second port adapted to receive dilution fluid radially adjacent the outlet.

49. The blood-processing device of claim 46, wherein the infusion port is radially adjacent the inlet for blood.

5 50. A method for processing blood, comprising the steps of:  
providing a housing having a fiber membrane, an inlet for blood, an outlet for blood, a headspace between the fiber membrane and the outlet, and an infusion port communicating with the headspace;

10 passing blood through the inlet;  
passing blood into contact with the fiber membrane;  
passing blood through the outlet; and  
infusing dilution fluid into the infusion port to produce hemodilution at the outlet.

15 51. The method of claim 50, wherein the housing further comprises an inlet for dialysate.

52. The method of claim 50, wherein the housing further comprises a second port adapted to receive dilution fluid radially adjacent the inlet.



53. The method of claim 50, wherein the infusion port is radially adjacent the outlet for blood.

54. A method for processing blood, comprising the steps of:  
providing a housing having a fiber membrane, an inlet for blood, an outlet  
5 for blood, a headspace between the fiber membrane and the inlet, and an infusion port  
communicating with the headspace;  
passing blood through the inlet;  
infusing dilution fluid into the infusion port to produce hemodilution at the  
inlet;  
10 passing blood into contact with the fiber membrane; and  
passing blood through the outlet.

55. The method of claim 54, wherein the housing further comprises an inlet for dialysate.

56. The method of claim 54, wherein the housing further comprises a  
15 second port adapted to receive dilution fluid radially adjacent the outlet.

57. The method of claim 54, wherein the infusion port is radially adjacent the inlet for blood.